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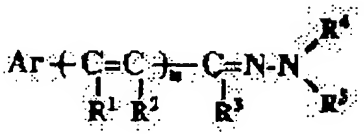
(54) ELECTROPHOTOGRAPHIC PHOTORECEPTOR

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a photoreceptor having high sensitivity and high stability at the time of repetitive use by using an electric charge generating material contg. a specified compd. and an electric charge transferring material contg. a specified compd.

SOLUTION: This electrophotographic photoreceptor contains an electric charge generating material contg. a reactional product of an oxytitanium phthalocyanine compd. with (2R,3R)-2,3-butanediol and/or (2S,3S)-2,3-butanediol and an electric charge transferring material contg. one or more kinds of compds. selected from among hydrazone compds. represented by formulae I, II, wherein (n) is 0 or 1, Ar is an arom. cyclic group or a heterocyclic group, each of R1-R3 is H, halogen, alkyl, etc., or a heterocyclic group, each of R4 and R5 is H, alkyl, etc., or a heterocyclic group, each of R6-R10 is H, halogen, alkyl, etc., or a heterocyclic group and Z is a group of atoms required to form a hetero ring in combination with the benzene ring and N.



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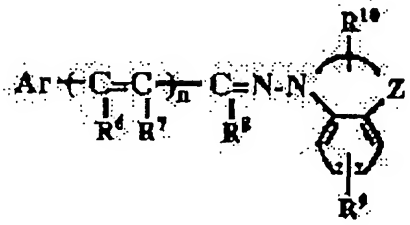

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LEGAL STATUS

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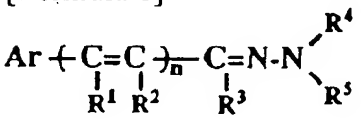
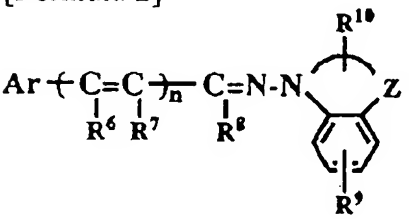
CLAIMS

[Claim(s)]
[Claim 1] In the photo conductor for electrophotography which has the photosensitive layer which changes on a conductive base using charge generating material and charge transportation material, charge generating material contains a resultant with an oxy-titanium phthalocyanine compound, (R [2],R[3])-2 and 3-butanediol and/or (2S, 3S) -2, and 3-butanediol, and charge transportation material is a general formula (1).
[Formula 1]

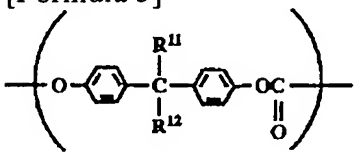


(n expresses 0 or 1 among a formula, and Ar expresses a ring machine or a heterocycle machine.) R1, R2, and R3 express a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an aralkyl machine, or a heterocycle machine in independent respectively, and R4 and R5 express a hydrogen atom, an alkyl group, an aryl group, an aralkyl machine, or a heterocycle machine in independent respectively. Moreover, these bases may have a substituent. The hydrazone compound and general formula (2) which are expressed
[Formula 2]

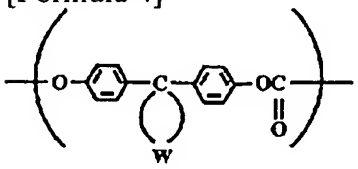


(n expresses 0 or 1 among a formula, and Ar expresses a ring machine or a heterocycle machine.) R6, R7, R8, R9, and R10 express a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an aralkyl machine, or a heterocycle machine in independent respectively. Z is an atomic group required to form a heterocycle with a nitrogen atom and the benzene ring. Moreover, these bases may have a substituent. Photo conductor for electrophotography characterized by the thing which is chosen from the group which consists of the hydrazone compound expressed, and which contain the compound more than a kind at least.
[Claim 2] The photo conductor for electrophotography according to claim 1 characterized by having the charge transporting bed of which a photosensitive layer distributes the charge generating layer and charge transportation material which consist of charge generating material in a binding resin, and consists.
[Claim 3] An oxy-titanium phthalocyanine compound, (R [2],R[3])-2 and 3-butanediol and/or (2S, 3S) -2, the photo conductor for electrophotography according to claim 1 or 2 characterized by a resultant

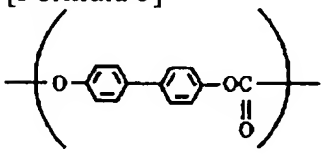
with 3-butanediol having a main peak at 9.5 degrees of the Bragg angle (2theta**0.2 degree) in the X diffraction spectrum over Cu-Kalpha.
[Claim 4] An oxy-titanium phthalocyanine compound, (R [2],R[3])-2 and 3-butanediol and/or (2S, 3S) -2, the photo conductor for electrophotography according to claim 1 or 2 characterized by a resultant with 3-butanediol having a peak in the X diffraction spectrum over Cu-Kalpha at 8.3 degrees of the Bragg angle (2theta**0.2 degree), 24.7 degrees, and 25.1 degrees.
[Claim 5] The photo conductor for electrophotography according to claim 1, 2, 3, or 4 characterized by the photosensitive layer containing charge generating material having a main peak at 8.3 degrees of the Bragg angle (2theta**0.2 degree) in the X diffraction spectrum over Cu-Kalpha.
[Claim 6] The binding resin used for charge transportation material is a general formula (3).
[Formula 3]



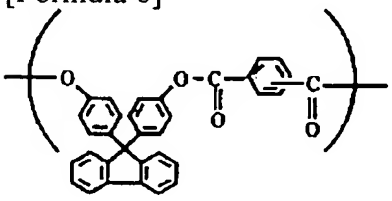
(The hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and R11 and R12 express a hydrogen atom, an alkyl group, or an aromatic machine in independent respectively.) Moreover, these bases may have a substituent. The polycarbonate, general formula (4) which have the repeat unit expressed
[Formula 4]



(The hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and W expresses an atomic group required to form a ring and a heterocycle.) Moreover, these bases may have a substituent. The polycarbonate which has the repeat unit expressed, the repeat unit expressed with the above-mentioned general formula (3), and general formula (5)
[Formula 5]



(-- the hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and these bases may have a substituent The copolymerization polycarbonate and general formula (6) which have the repeat unit expressed with)
[Formula 6]



(-- the hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and these bases may have a substituent Photo conductor for electrophotography according to claim 1, 2, 3, 4, or 5 characterized by containing at least one or more sorts of the polycarbonates or polyarylates which are chosen from the group which consists of the polyarylate which has the repeat unit

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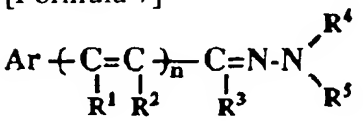
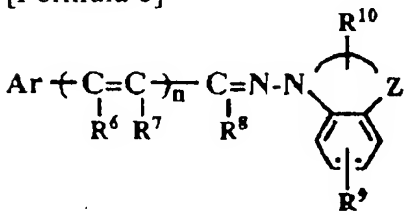
DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the photo conductor for electrophotography used for a copying machine, LD printer, an LED printer, etc.
[0002]
[Description of the Prior Art] In recent years, development of the photo conductor for electrophotography of the functional discrete type which made the charge generating function and charge transportation function of the photo conductor for electrophotography share with a separate material with a rise of the demand of high-sensitivity-izing and a raise in endurance to the photo conductor for electrophotography is prosperous.
[0003] Moreover, the phthalocyanine system compound which induces these light sources attracts attention as a material used for photo conductors for electrophotography, such as a copying machine using the light source of the long wavelength near [which is represented by the semiconductor laser (LD) accompanying development and light emitting diode (Light Emitting Diode) of electronic industry] 700nm, LD printer, and an LED printer.
[0004] the phthalocyanine compound which has titanium as a central metal also in these -- high sensitivity -- attention is attracted as a material [-izing / a material] and research and development are briskly done for search of various crystallized types, composition of a derivative, etc.
[0005] As a photo conductor for electrophotography using the titanium system phthalocyanine compound, the photo conductor for electrophotography which comes to carry out the laminating of the charge transporting bed containing a hydrazone system compound and binder-polymer on the charge generating layer containing a titanium phthalocyanine compound and binder-polymer is indicated by JP,61-109056,A, for example.
[0006] Moreover, the photo conductor for electrophotography which has a photosensitive layer including the titanylphthalocyanine crystal which becomes JP,5-273774,A from an adduct with the un-annular organic compound of the carbon atomic numbers 5-10 which have a contiguity hydroxyl group is indicated.
[0007] However, even if it is these photo conductors for electrophotography, it is hard to call it what inadequate points, such as sensitivity and stability at the time of repeat use, also have, and can not necessarily be satisfied, and the further improvement is called for.
[0008] Moreover, it sets to the photo conductor for functional discrete-type electrophotography. Generally a specific charge generating material is received. the combination of a specific charge transportation material Sensitivity, The effective thing is not known in stability, endurance, etc. and the photo conductor for electrophotography in which the property in which an effective charge transportation material was not necessarily excellent in combination with other charge generating material in combination with a certain specific charge generating material is shown is not necessarily obtained. when the combination of charge generating material and charge transportation material is unsuitable, the performance as about [that the function of charge generating material and each charge

transportation material cannot fully be demonstrated] and a photo conductor for electrophotography is made to fall However, the universal principle in combination selection of charge generating material and charge transportation material was not necessarily clear, and it was difficult for the combination of a specific charge transportation material effective in a specific charge generating material to find out.
[0009]
[Problem(s) to be Solved by the Invention] The technical problem which this invention tends to solve has high sensitivity in the long wavelength light source near 700nm, can use it for the electrophotography formula printer and copying machine which use semiconductor laser (LD) and light emitting diode (Light Emitting Diode) as the light source, and is to offer the photo conductor for electrophotography with high stability repeatedly at the time of use by high sensitivity.
[0010]
[Means for Solving the Problem] When this invention persons inquired wholeheartedly in view of the above-mentioned actual condition, they find out that the photo conductor for electrophotography which prepares the photosensitive layer containing a specific charge generating material and a specific charge transportation material, and changes discovers the outstanding sensitivity and potential stability, and came to complete this invention.
[0011] Namely, this invention is set to the photo conductor for electrophotography which has the photosensitive layer which changes on a conductive base using charge generating material and charge transportation material, in order to solve the above-mentioned technical problem. charge generating material -- a resultant (it is hereafter called the phthalocyanine resultant used by this invention.) with an oxy-titanium phthalocyanine compound, (R [2],R[3])-2 and 3-butanediol and/or (2S, 3S) -2, and 3-butanediol It contains and charge transportation material is a general formula (1).
[0012]
[Formula 7]



[0013] (n expresses 0 or 1 among a formula, and Ar expresses a ring machine or a heterocycle machine.) R1, R2, and R3 express a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an aralkyl machine, or a heterocycle machine in independent respectively, and R4 and R5 express a hydrogen atom, an alkyl group, an aryl group, an aralkyl machine, or a heterocycle machine in independent respectively. Moreover, these bases may have a substituent. The hydrazone compound and general formula (2) which are expressed
[0014]
[Formula 8]



[0015] (n expresses 0 or 1 among a formula, and Ar expresses a ring machine or a heterocycle machine.) R6, R7, R8, R9, and R10 express a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an aralkyl machine, or a heterocycle machine in independent respectively. Z is an atomic group required to form a heterocycle with a nitrogen atom and the benzene ring. Moreover, these bases may have a substituent. The photo conductor for electrophotography characterized by the thing which is chosen from the group which consists of the hydrazone compound expressed, and which contain the compound more than a kind at least is offered.
[0016] The manufacture method of the phthalocyanine resultant used by this invention -(2R, 3R) 2

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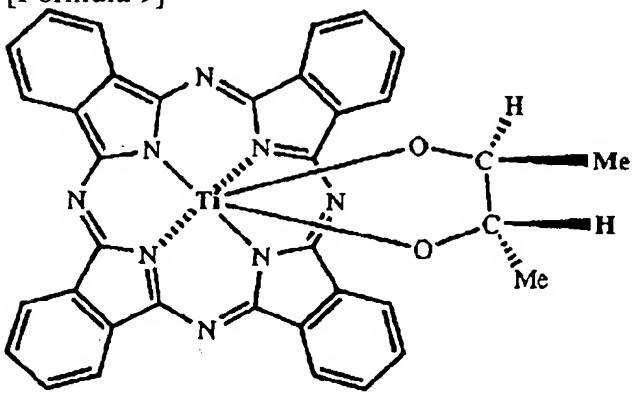
[optical activity, for example as (1) oxy-titanium phthalocyanine compound], 3-butanediol and/or (2S, 3S) -2, the manufacture method by the reaction with 3-butanediol although not limited especially, (2) Dihalo titanium phthalocyanine compounds, such as a dichloro titanium phthalocyanine, optical activity -(2R, 3R) 2 and 3-butanediol and/or (2S, 3S) -2, the manufacture method by the reaction with 3-butanediol, (3) The manufacture method by the coupling reaction of titanium salts, such as a titanium tetrachloride under optical activity -(2R, 3R) 2, 3-butanediol and/or (2S, 3S) -2, and 3-butanediol existence, and an ortho phthalonitrile derivative etc. is mentioned. in this invention The resultant obtained by which manufacture method can also be used.

[0017] Among these manufacture methods, since operation is simple, the reaction with an oxy-titanium phthalocyanine compound, optical activity -(2R, 3R) 2 and 3-butanediol and/or (2S, 3S) -2, and 3-butanediol is suitable.

[0018] The structure is a formula (7) although the phthalocyanine resultant used by this invention is obtained by the above-mentioned manufacture method.

[0019]

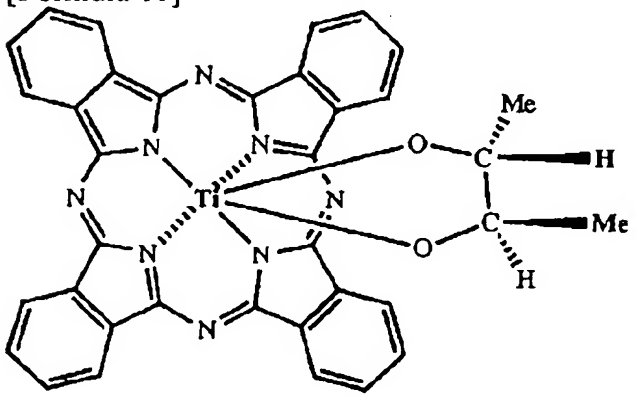
[Formula 9]



[0020] Or a formula (8)

[0021]

[Formula 10]



[0022] It is presumed that it is in the crystallized state which comes out and contains the phthalocyanine resultant of the specific isomer structure expressed.

[0023] As for the phthalocyanine resultant used by this invention, it is desirable that it is in a crystallized state, and it is more desirable in the X diffraction spectrum especially over Cu-Kalpha that it is in the crystallized state which has a peak at that it is in the crystallized state which has a main peak at 9.5 degrees of the Bragg angle (2theta**0.2 degree) or 8.3 degrees, 24.7 degrees, and 25.1 degrees.

[0024] Although it has the photosensitive layer which changes using the charge generating material which contains the above-mentioned crystal of the phthalocyanine resultant used by this invention in the photo conductor for electrophotography of this invention In the X diffraction spectrum over Cu-Kalpha

of a photosensitive layer The photosensitive layer which has a main peak at 9.5 degrees of the Bragg angle (2theta**0.2 degree), The photosensitive layer which has a peak at 8.3 degrees, 24.7 degrees, and 25.1 degrees, and the photosensitive layer which has a main peak at 8.3 degrees are desirable, and the photosensitive layer which has a main peak especially at 8.3 degrees of the Bragg angle (2theta**0.2 degree) is more desirable.

[0025] It is desirable to perform the reaction with the oxy-titanium phthalocyanine compound for obtaining the phthalocyanine resultant used by this invention, optical activity -(2R, 3R) 2 and 3-butanediol and/or (2S, 3S) -2, and 3-butanediol on heating conditions, the range of reaction temperature of 30-300 degrees C is desirable, and especially its range that is 50-250 degrees C is desirable.

[0026] the oxy-titanium phthalocyanine compounds used as the synthetic powder of the phthalocyanine resultant used by this invention may be crystallized types, such as alpha type, beta type, alpha, beta hybrid model, gamma type, Y type, and an amorphous type, in the limitation which does not spoil the effect of this invention that what is necessary is just what has oxy-titanium at the center of the phthalocyanine frame which may have the substituent, unless the effect of this invention is spoiled When a phthalocyanine frame has a substituent, as the substituent, halogen atom; nitro groups, such as alkoxy-group; fluorine atoms, such as low-grade alkyl group; methoxy machines, such as a methyl group and an ethyl group, a chlorine atom, and a bromine atom, etc. are mentioned. As for the number of these substituents, 1 to 16 is possible, and the combination of two or more substituents is also possible for it.

[0027] Moreover, per one mol of oxy-titanium phthalocyanine compounds, 0.25 mols or more have optical activity -(2R, 3R) 2, 3-butanediol and/or (2S, 3S) -2, and desirable 3-butanediol, and the mole ratio of a reaction with an oxy-titanium phthalocyanine compound, optical activity -(2R, 3R) 2 and 3-butanediol and/or (2S, 3S) -2, and 3-butanediol has the more desirable range which is 0.5-1.5 mols.

[0028] -2 and 3-butanediol used as the synthetic powder of the phthalocyanine resultant used by this invention (2R, 3R) and/or (2S, 3S) -2, and 3-butanediol are optical activity, and it is desirable to use optical activity threo type 2 from which one use of (R [2],R[3])-2 and 3-butanediol or (2S, 3S) -2, and 3-butanediol or both content differs, and 3-butanediol.

[0029] One optical isomer of the phthalocyanine resultant used by this invention may be independently used for the charge generating material of the photo conductor for electrophotography of this invention, and those two or more sorts may be mixed and used for it. That is, you may mix and use the resultant of an oxy-titanium phthalocyanine compound and (R [2],R[3])-2 and 3-butanediol, and the resultant of an oxy-titanium phthalocyanine compound and (2S, 3S)-2 and 3-butanediol.

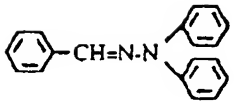
[0030] For a reaction with an oxy-titanium phthalocyanine compound, (R [2],R[3])-2 and 3-butanediol and/or (2S, 3S) -2, and 3-butanediol, various kinds of organic solvents of well-known common use can be used together if needed. As such an organic solvent, for example Benzene, a nitrobenzene, Aromatic system organic solvents, such as a dichlorobenzene, a trichlorobenzene, and alpha-chloronaphthalene; A cyclohexanone, Ketone system organic solvents, such as a methyl ethyl ketone and a methyl isobutyl ketone; A tetrahydrofuran, Ether system organic solvents, such as a dimethyl cellosolve; Ester system organic-solvent; dimethylformamides, such as butanoic-acid ethyl and a butyl lactate, non-proton system polarity organic-solvents [, such as dimethyl sulfoxide,]; -- halogen system organic-solvents [, such as trichloroethane,]; -- monohydric-alcohol system organic solvents, such as amyl alcohol and a dodecanol, etc. can be mentioned These solvents can be used, even if it uses two or more sorts together, even when it is independent.

[0031] After compounding the phthalocyanine resultant used by this invention, you may refine if needed.

[0032] As mentioned above, on the occasion of composition of the phthalocyanine resultant used by this invention, each manufacture conditions, such as a reaction mole ratio, reaction temperature, reaction time, a solvent, a catalyst, the refining method, and the crystallization method, can be chosen suitably, and can be adopted.

[0033] Although the charge generating material used in the photo conductor for electrophotography contains the phthalocyanine resultant used by this invention as an indispensable component in this

invention, it is also possible to use together other well-known charge generating material if needed.
[0034] As other charge generating material which can be used together, crystallized types, such as a non-metal phthalocyanine compound, various metal phthalocyanine compounds, for example, alpha type, beta type, alpha, beta hybrid model, gamma type, and Y type, or an amorphous type oxy-titanium phthalocyanine compound is mentioned, for example. Moreover, the charge generating material, for example, 1 monoazo pigment, other than a phthalocyanine, Azo system pigments, such as a disazo pigment and a tris azo pigment, 2 various metal phthalocyanines, Phthalocyanine system pigments, such as a non-metal phthalocyanine and naphthalocyanine, 3) A peri non pigment, a perylene pigment, an anthraquinone pigment, a Quinacridone pigment, Condensation polycyclic pigments, such as an indigo pigment and a thioindigo pigment, 4 SUKUWARIUMU system coloring matter, 5) Pyrylium salt system coloring matter, such as azulene system coloring matter, 6 pyrylium salt, and thia pyrylium salt, 7) Inorganic system material, such as selenium compounds, such as cyanine system coloring matter, 8 triphenylmethane-color system coloring matter, nine seleniums, a selenium tellurium, and a selenium arsenic, and a zinc oxide, a cadmium sulfide, a cadmium selenide, amorphous silicon, etc. can also be used together. In addition, if it is the material which absorbs light and generates a charge carrier efficiently, it can be used even if it is which material. The charge generating material which can be used together is not limited to what was indicated here, on the occasion of the use, may mix independence or two kinds or more, and may be used.
[0035] As being chosen out of the group which consists of the hydrazone compound expressed with the hydrazone compound and general formula (2) which are expressed with the aforementioned general formula (1) as a specific charge transportation material used for the photo conductor for electrophotography of this invention, the compound more than a kind is used as it is few. Although a structure expression shows the example of representation below, this invention is not necessarily limited to these examples.
[0036] in addition, the following structure expressions -- setting -- Me -- in n-propyl group and Bzl, a benzyl and Ph express a phenyl group, as for a methyl group and Et, p-Tol expresses [an ethyl group and n-Pr] p-tolyl group, and the number of the structure-expression bottom expresses compound No.
[0037]
[Formula 11]



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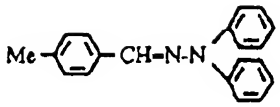

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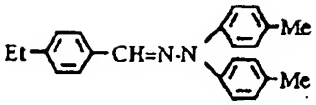

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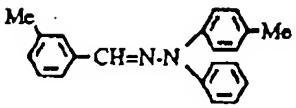

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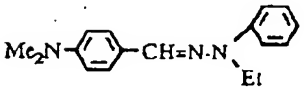

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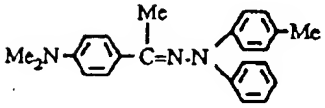

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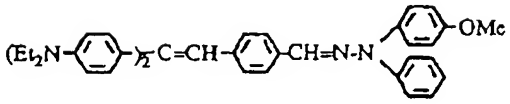

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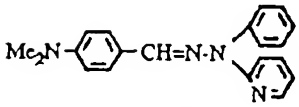

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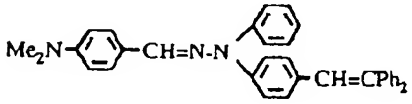

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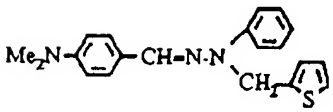

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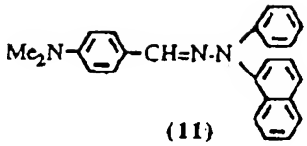
[0038]
[Formula 12]

h g cg b eb cg e e



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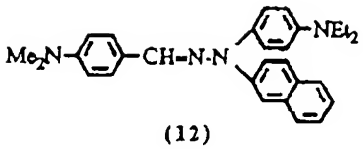

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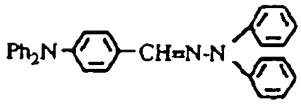

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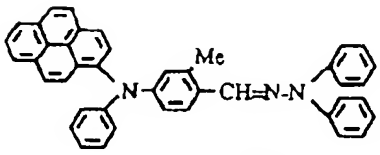

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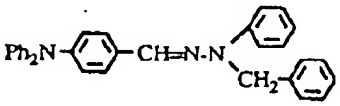

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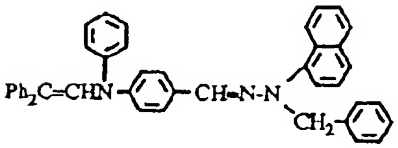

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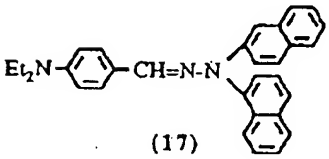

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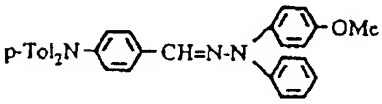

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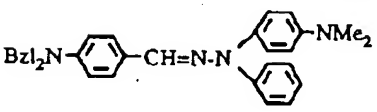

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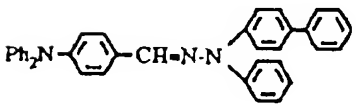

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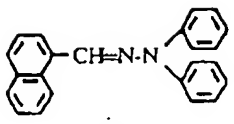
[0039]
[Formula 13]

h g cg b eb cg e e



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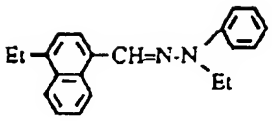

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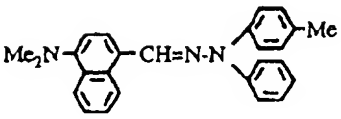

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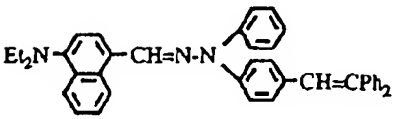

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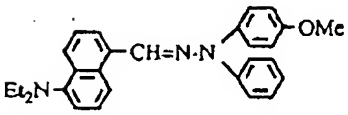

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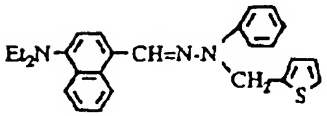

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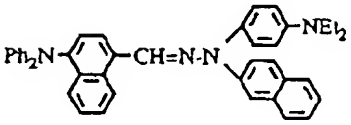

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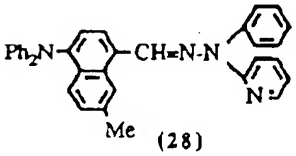

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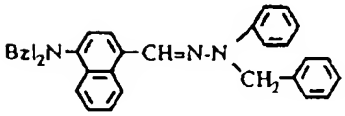

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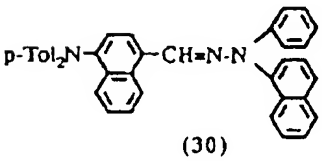
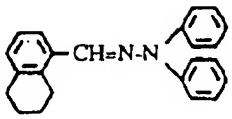


(30)

[0040]
[Formula 14]

h g cg b eb cg e e



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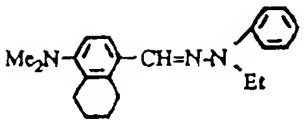

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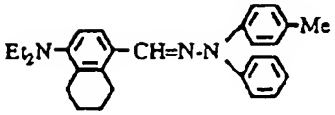

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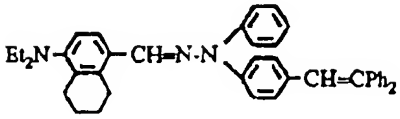

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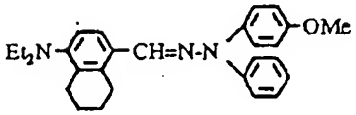

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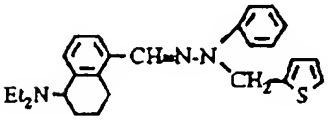

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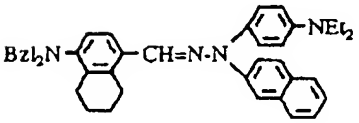

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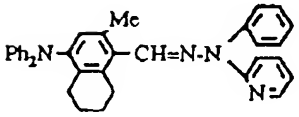

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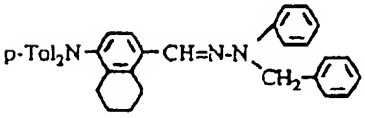

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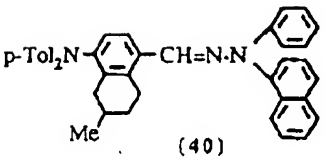

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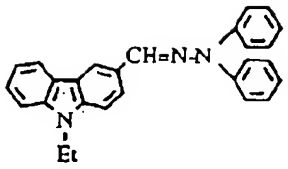
[0041]
[Formula 15]

h g cg b eb cg e e



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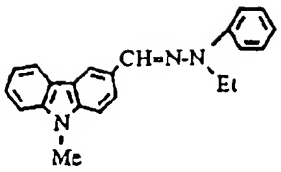

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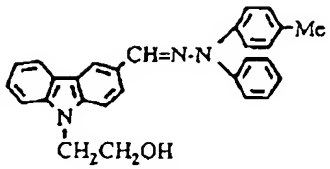

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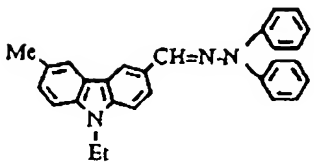

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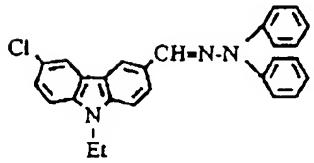

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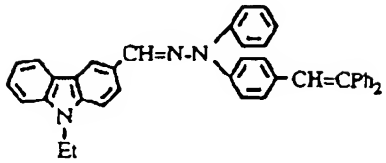

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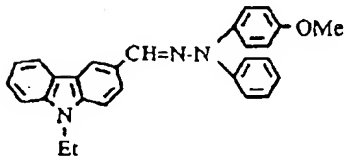

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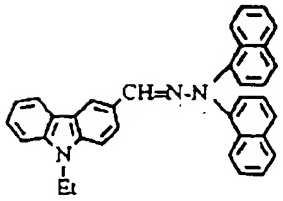

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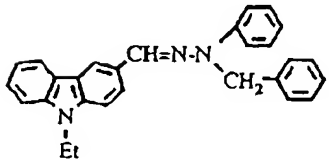

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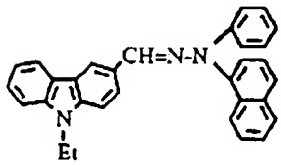
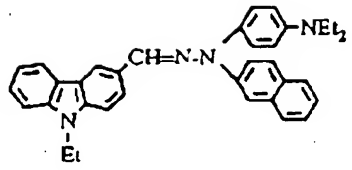


(50)

[0042]
[Formula 16]

h g cg b eb cg e e



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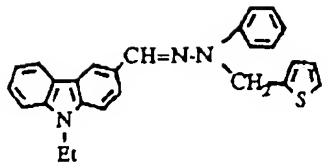

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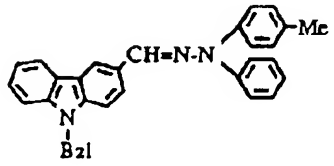

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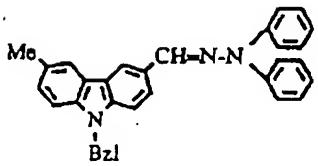

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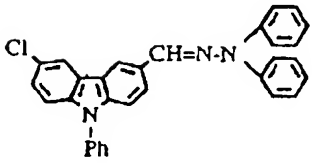

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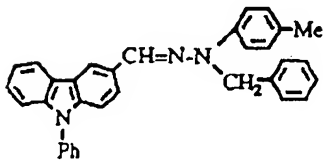

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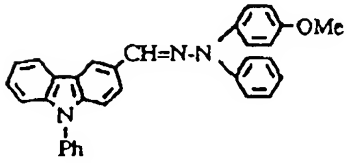

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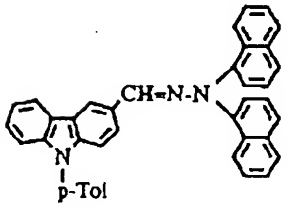

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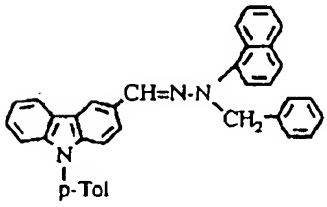

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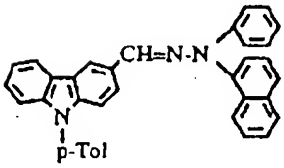

(60)

[0043]
[Formula 17]

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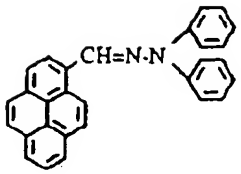

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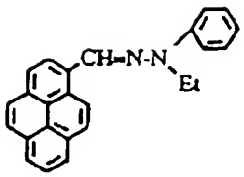

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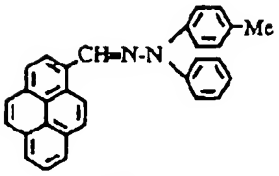

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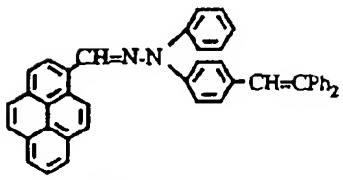

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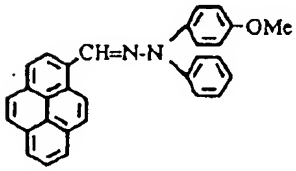

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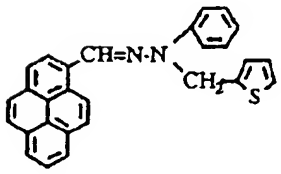

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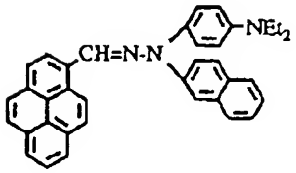

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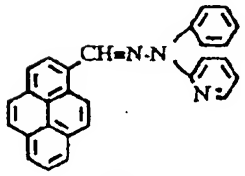

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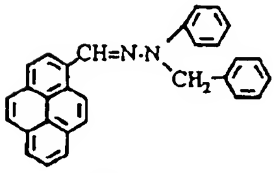

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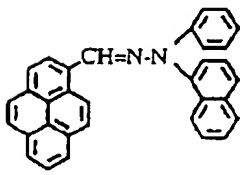
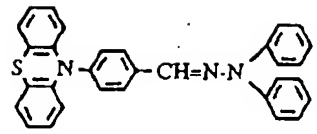


(70)

[0044]
[Formula 18]

h g cg b eb cg e e



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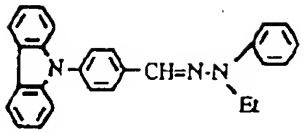

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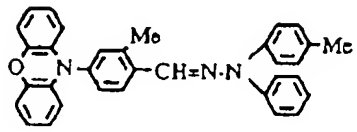

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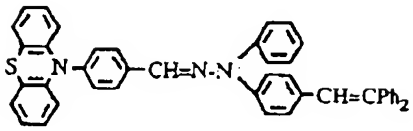

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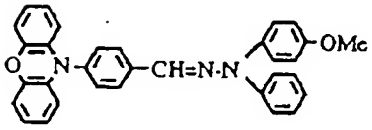

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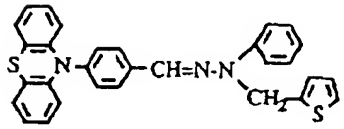

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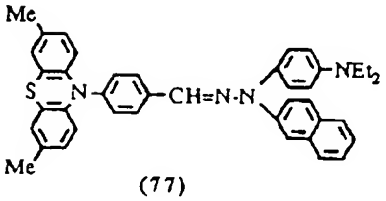

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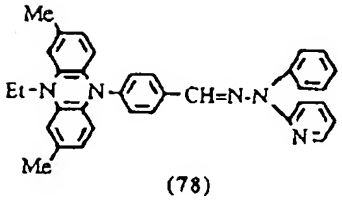

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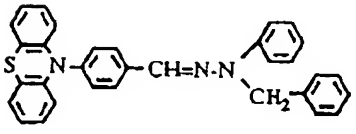

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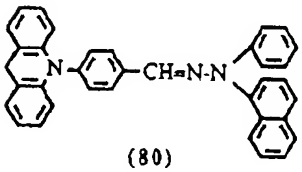

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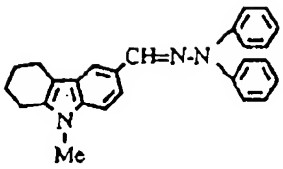
[0045]
[Formula 19]

h g cg b eb cg e e



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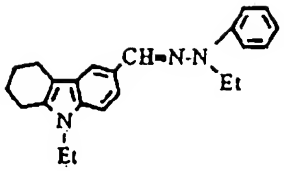

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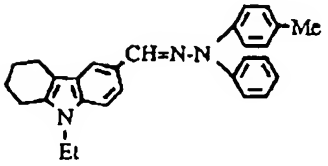

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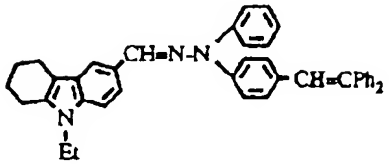

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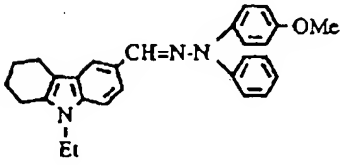

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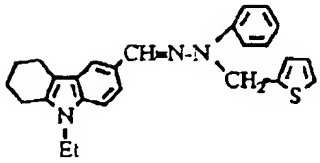

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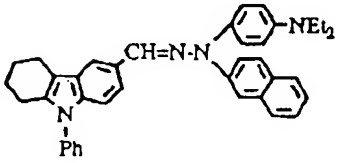

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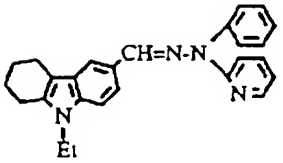

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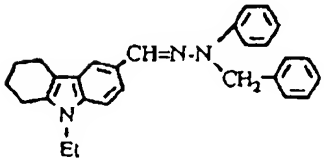

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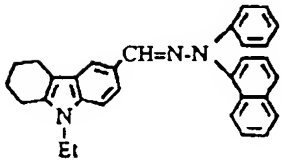
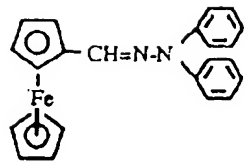


(90)

[0046]
[Formula 20]



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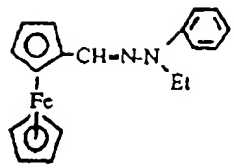

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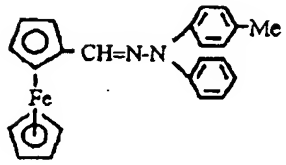

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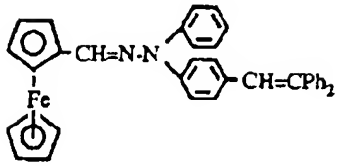

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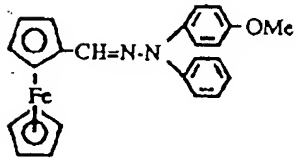

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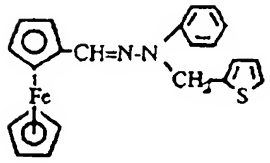

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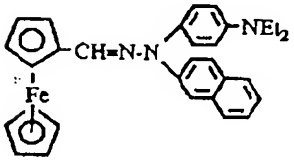

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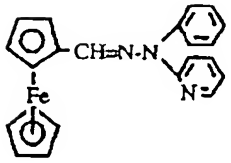

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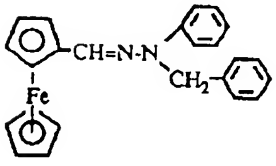

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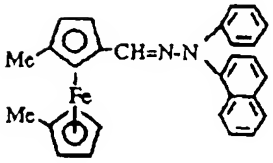

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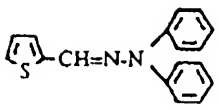
[0047]
[Formula 21]



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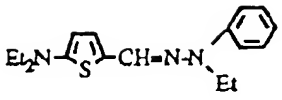

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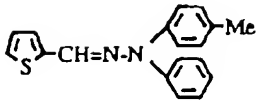

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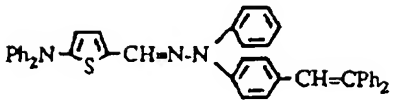

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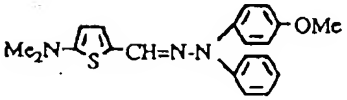

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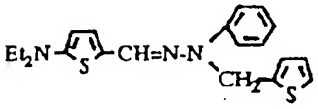

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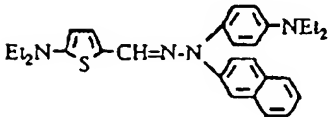

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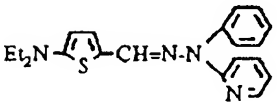

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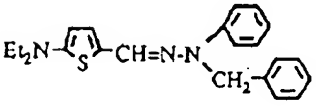

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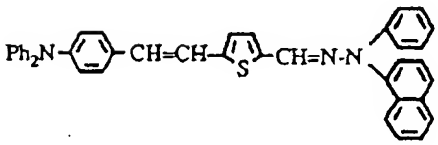

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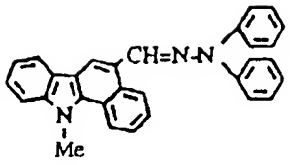
[0048]
[Formula 22]



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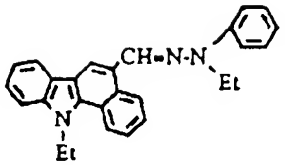

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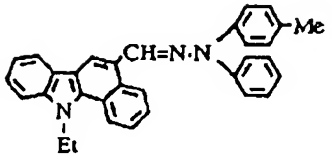

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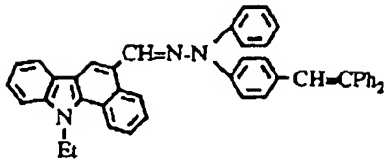

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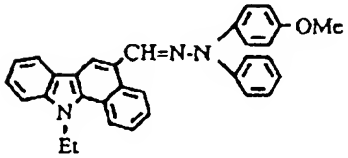

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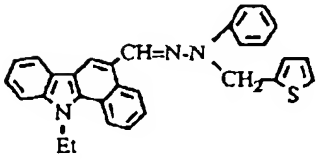

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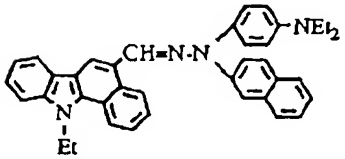

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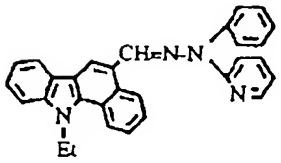

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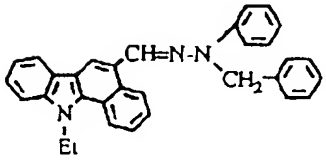

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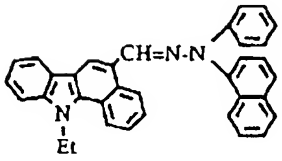

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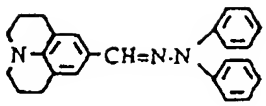
[0049]
[Formula 23]



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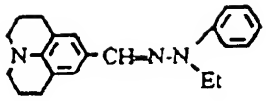

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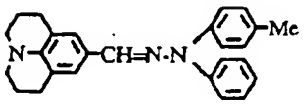

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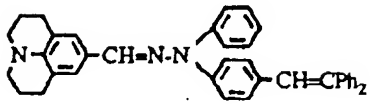

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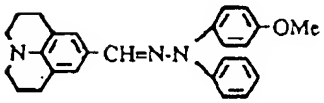

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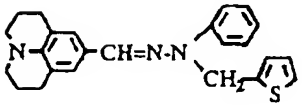

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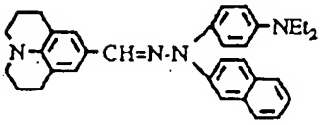

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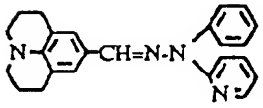

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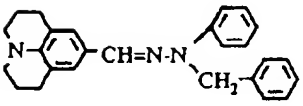

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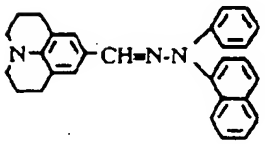

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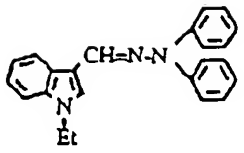
[0050]
[Formula 24]



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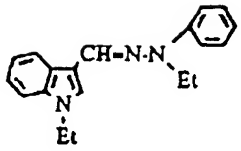

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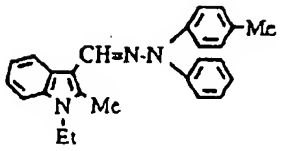

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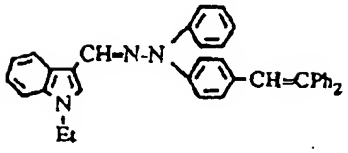

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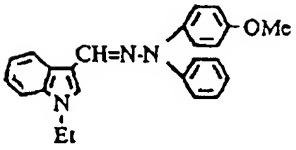

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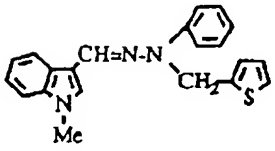

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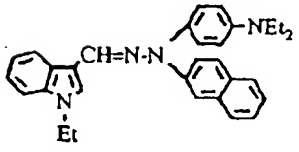

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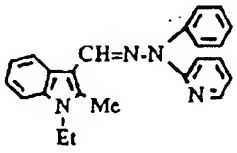

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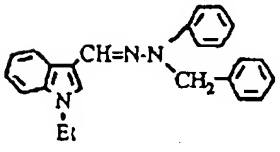

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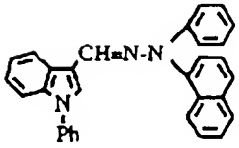

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[0051]
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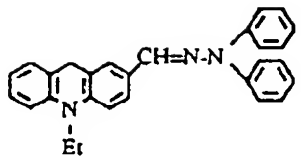

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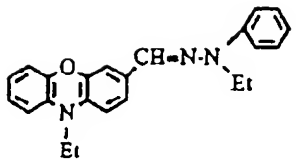

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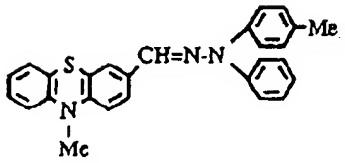

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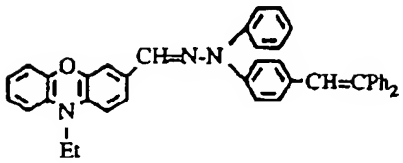

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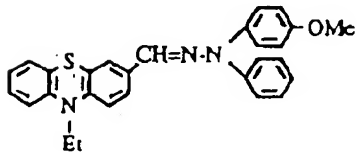

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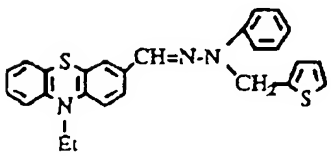

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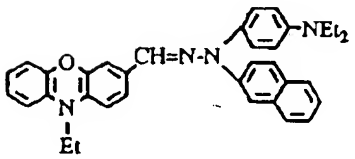

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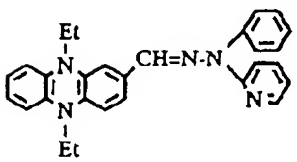

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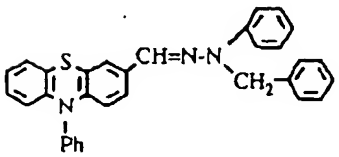

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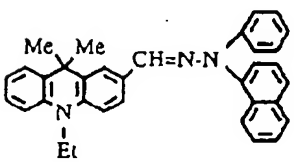

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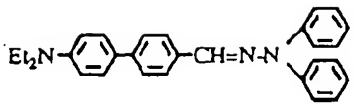
[Formula 26]



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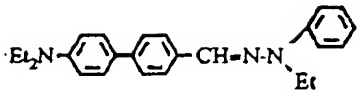

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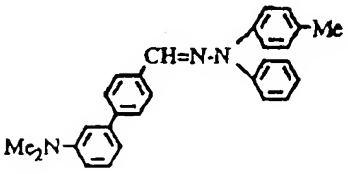

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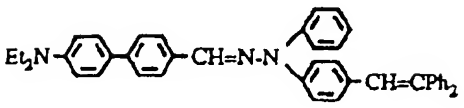

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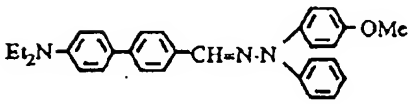

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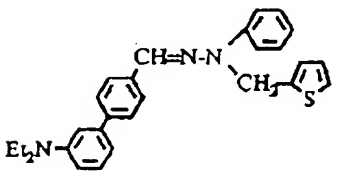

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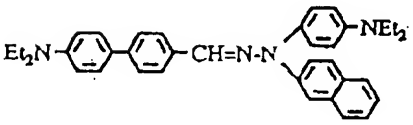

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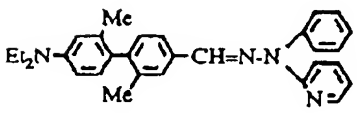

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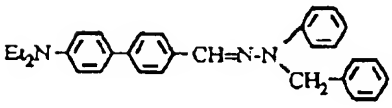

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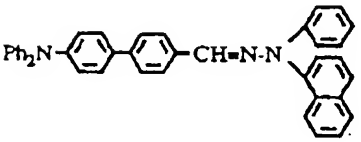

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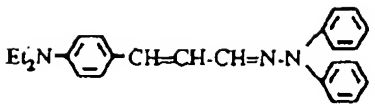

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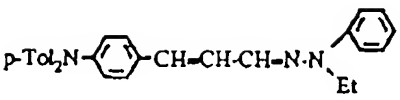

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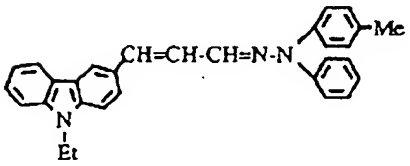

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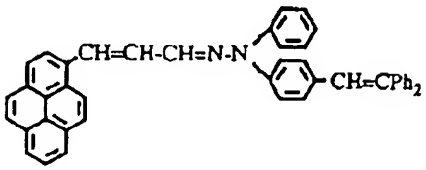

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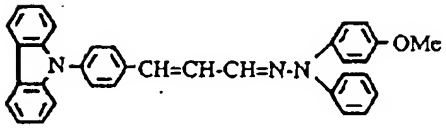

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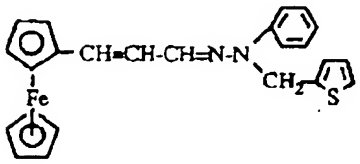

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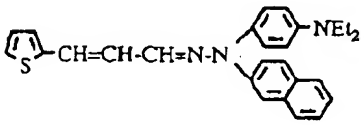

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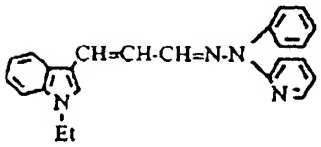

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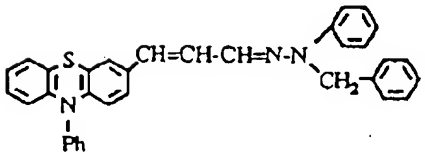

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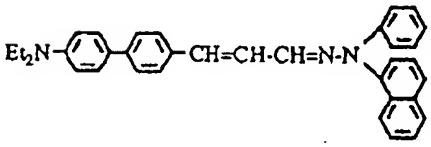

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[0054]
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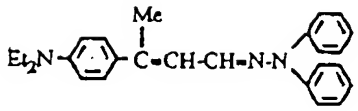

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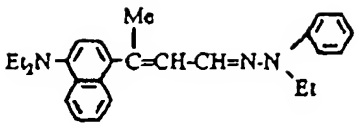

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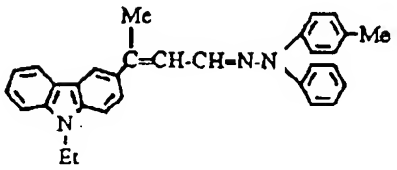

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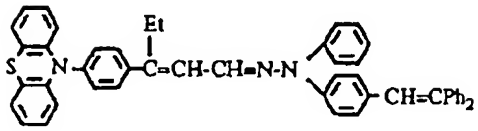

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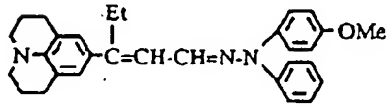

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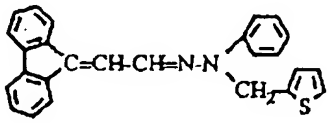

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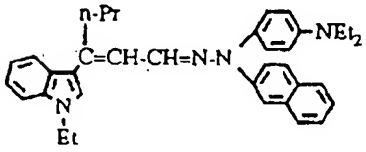

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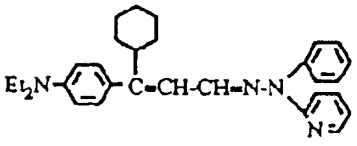

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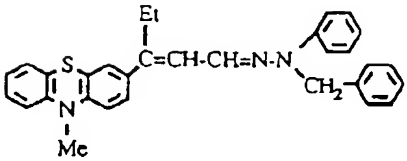

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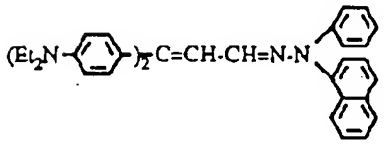

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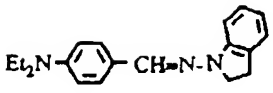
[0055]
[Formula 29]

h g cg b eb cg e e



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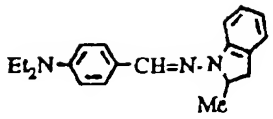

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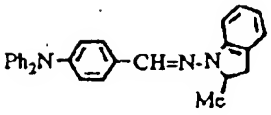

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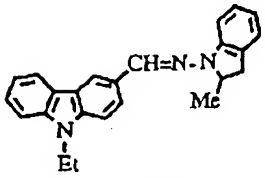

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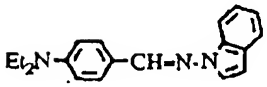

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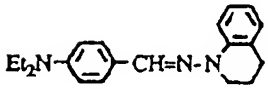

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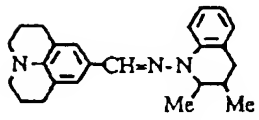

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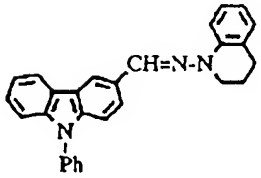

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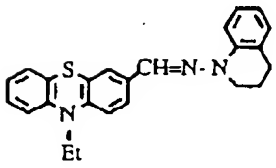

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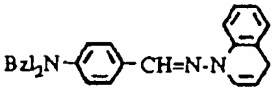
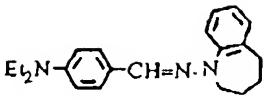


(190)

[0056]
[Formula 30]



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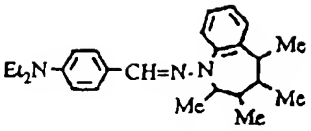

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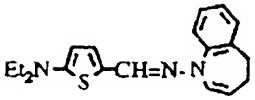

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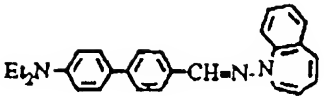

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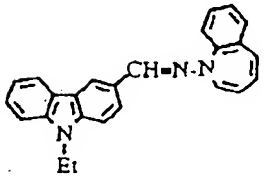

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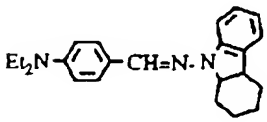

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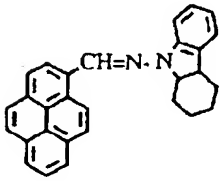

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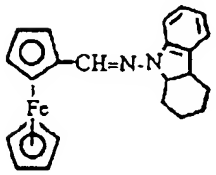

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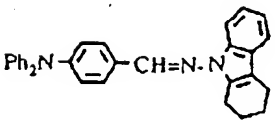

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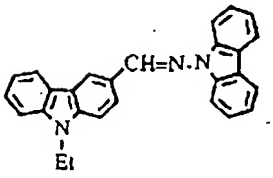
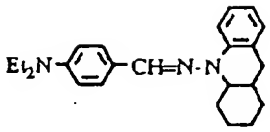


(200)

[0057]
[Formula 31]



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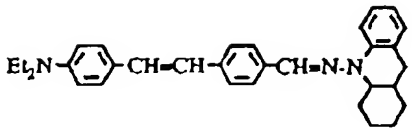

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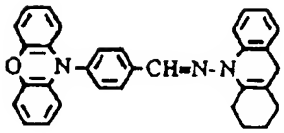

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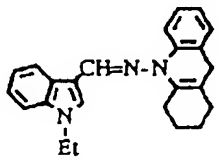

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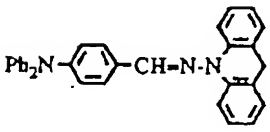

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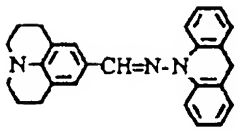

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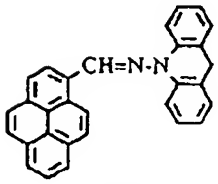

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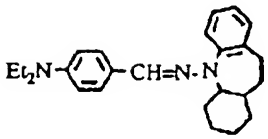

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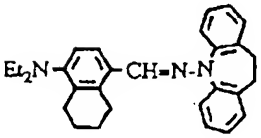

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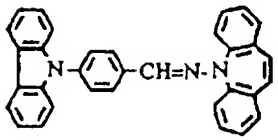
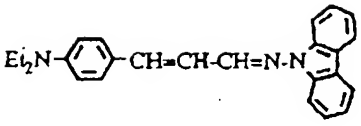


(210)

[0058]
[Formula 32]



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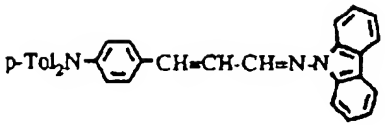

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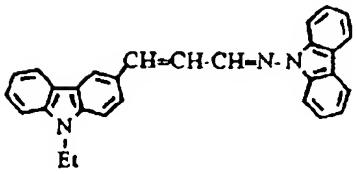

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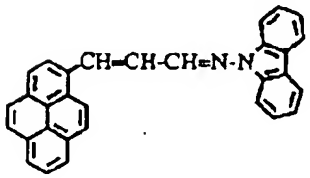

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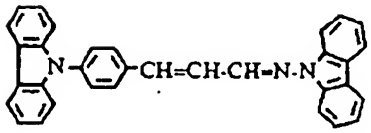

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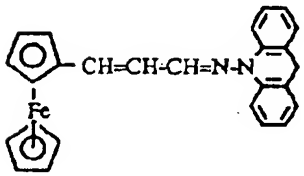

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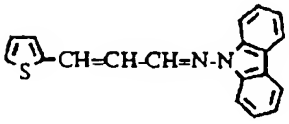

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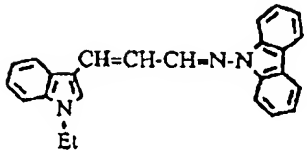

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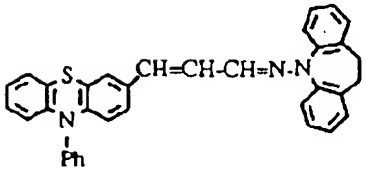

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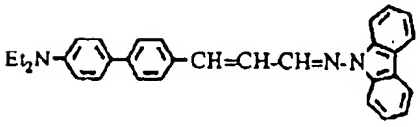
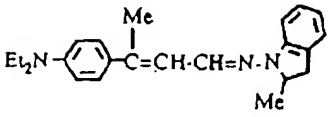


(220)

[0059]
[Formula 33]



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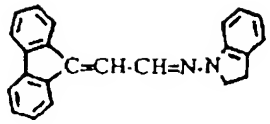

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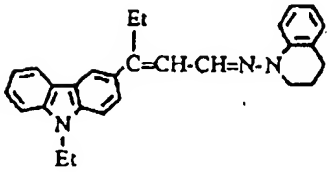

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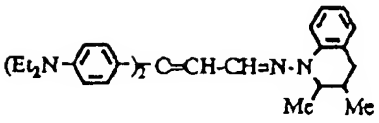

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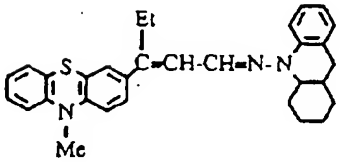

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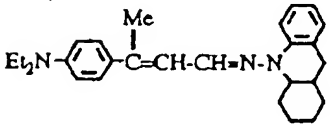

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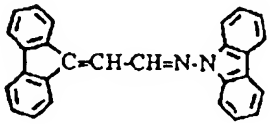

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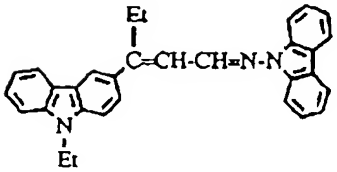

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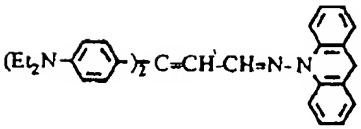

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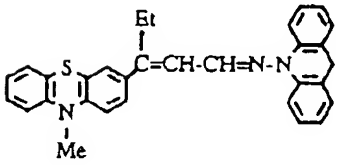


(230)

[0060] The composition of the photo conductor for electrophotography of this invention can take various various structures. The example was shown in drawing 5 from drawing 1 .

[0061] Drawing 1 and the photo conductor for electrophotography of drawing 2 prepare the photosensitive layer which consists of the charge generating layer 2 which makes charge generating material a subject, and the charge transporting bed 3 which consists of a binder resin charge transportation material and if needed [photosensitive-layer formation top] on the conductive base 1.

[0062] The photo conductor for electrophotography of drawing 3 prepares the photosensitive layer which made the charge generating material 7 and the charge transportation material 8 dissolve or

distribute in a binder resin on the conductive base 1.
[0063] The photo conductor for electrophotography of drawing 4 forms an interlayer 5 between the conductive base 1 of the photo conductor for electrophotography of drawing 1 , and the charge generating layer 2 for the purpose of control of protection of a conductive base, an adhesive improvement, improvement in coating nature, and the charge injection rate to the photosensitive layer from a conductive base etc.
[0064] In order that the photo conductor for electrophotography of drawing 5 may protect the photo conductor for electrophotography from a physical or chemical external factor, the surface-protection layer 6 is further formed in the front face of the photo conductor for electrophotography of drawing 1 .
[0065] The interlayer and surface-protection layer which were shown with above-mentioned drawing 4 and the photo conductor for electrophotography of drawing 5 can be prepared also in photo conductors for electrophotography other than drawing 1 if needed.
[0066] The charge generating material contained in the charge generating layer 2 generates a charge, and on the other hand, in the case of drawing 1 , drawing 2 , drawing 4 , and the photo conductor for electrophotography of drawing 5 , the charge transporting bed 3 receives pouring of a charge, and carries out the transportation to it. That is, generation of a charge required for optical attenuation is performed with charge generating material, and transportation of a charge is performed by the charge transportation medium. In the photo conductor for electrophotography of drawing 3 , charge generating material generates a charge to light, and movement of a charge is performed by charge ****** material and the binder resin.
[0067] The photo conductor for electrophotography of drawing 1 on the charge generating layer which consists of the vacuum evaporationo film of charge generating material Or after applying the dispersion liquid which distributed and obtained the particle of charge generating material in the solvent which dissolved the binder resin if needed, After applying the solution which used the binder resin together and dissolved charge transportation material independence or if needed on the charge generating layer obtained by making it dry, it can manufacture by preparing the charge transporting bed obtained by making it dry.
[0068] After the photo conductor for electrophotography of drawing 2 applies the solution which used the binder resin together and dissolved charge transportation material independence or if needed on a conductive base, The charge generating layer which consists of the vacuum evaporationo film of charge generating material on the charge transporting bed obtained by making it dry, Or after applying the dispersion liquid which distributed and obtained the particle of charge generating material in the solvent or the binder resin solution, it can manufacture by preparing the charge generating layer obtained by making it dry.
[0069] The photo conductor for electrophotography of drawing 3 can be manufactured by preparing the photosensitive layer obtained by making it dry, after making the solution which used the binder resin together and dissolved charge transportation material independence or if needed distribute the particle of charge generating material and applying this to it on a conductive base.
[0070] In the case of drawing 1 , drawing 2 , drawing 4 , and the photo conductor for electrophotography electrophotography of drawing 5 , especially the range charge generating layer thickness has desirable 5 micrometers or less, and is [range] 0.01-2 micrometers is desirable, the thickness of a charge transporting bed has the desirable range of 3-50 micrometers, and especially its range that is 5-30 micrometers is desirable. In the case of the photo conductor for electrophotography of drawing 3 , the thickness of a photosensitive layer has the desirable range of 3-50 micrometers, and especially its range that is 5-30 micrometers is desirable. Moreover, an interlayer's thickness in the photo conductor for electrophotography of drawing 4 has desirable 5 micrometers or less, and especially its range that is 0.1-1 micrometer is desirable. The surface-protection layer thickness in the photo conductor for electrophotography of drawing 5 of 2 micrometers or less is desirable, and especially the range of 0.01-1 micrometer is desirable.
[0071] The rate of the charge transportation material in the charge transporting bed in drawing 1 , drawing 2 , drawing 4 , and the photo conductor for electrophotography of drawing 5 has 5 - 100% of

the weight of a desirable range, and is desirable. [of 40 - 80% of the weight of especially the range] Moreover, the rate of the charge generating material in a charge generating layer has 5 - 100% of the weight of a desirable range, and is desirable. [of 40 - 80% of the weight of especially the range] The rate of the charge transportation material in the photosensitive layer in the photo conductor for electrophotography of drawing 3 has 5 - 99% of the weight of a desirable range, and the rate of charge generating material has 1 - 50% of the weight of a desirable range, and is desirable. [of 3 - 20% of the weight of especially the range]

[0072] Also in production of which photo conductor for electrophotography of drawing 1 - drawing 5 , a plasticizer and a sensitizer can be used with a binder resin.

[0073] Although the compound more than a kind is used for it even if the photo conductor for electrophotography of this invention has few hydrazone compounds expressed with a general formula (1) or a general formula (2) as a charge transportation material, you may use together other well-known charge transportation material if needed.

[0074] As a charge transportation material of the low molecular weight compound which can be used together For example, 1N-ethyl carbazol, N-isopropyl carbazol, Carbazol, such as N-phenyl carbazol; 2N-methyl-N-phenyl hydrazino-3-methylidyne-9-ethyl carbazol, N, N-diphenyl hydrazino-3-methylidyne-9-ethyl carbazol, p-(N and N-dimethylamino) benzaldehyde diphenyl hydrazone, p-(N and N-diethylamino) benzaldehyde diphenyl hydrazone, p-(N and N-diphenylamino) benzaldehyde diphenyl hydrazone, 1-[4-(N and N-diphenylamino) BENJIRIDENIMINO]-2, 3-dimethyl indoline, N-ethyl carbazol-3-methylidyne-N-amino indoline, Hydrazones, such as N-ethyl carbazol-3-methylidyne-N-amino tetrahydroquinoline; 32, 5-screw (p-diethylaminophenyl) - OKISAJIAZO-RU;41-phenyl-3-, such as 1, 3, and 4-OKISAJIAZO-RU A (p-diethylaminostyryl)-5-(p-diethylaminophenyl) pyrazoline, Pyrazolines, such as a 1-[quinolyl-(2)]-3-(p-diethylaminophenyl) pyrazoline; A 5 tree p-tolyl amine, N, N'-diphenyl - N, an N'-screw (3-methylphenyl) Butadienes;74-(2 and 2-diphenyl ethenyl)-N, such as arylamines;61, such as -1, the 1'-biphenyl -4, and a 4'-diamine, the 1-screw (p-diethylaminophenyl) -4, and 4-diphenyl-1,3-butadiene, Styryls, such as N-diphenyl benzene amine, 4-(1, 2, and 2-triphenyl ethenyl)-N, and N-diphenyl benzene amine, are mentioned.

[0075] As a charge transportation material of the high molecular compound which can be used together, Polly N-vinylcarbazole, halogenation Polly N-vinylcarbazole, a polyvinyl pyrene, polyvinyl anthracene, a polyvinyl acridine, Polly 9-vinyl phenyl anthracene, a pyrene-formamide resin, an ethyl carbazol-formaldehyde resin, triphenylmethane-color polymer -, a polyphenyl alkyl silane, etc. are mentioned, for example.

[0076] The charge transportation material which can be used together is not limited to what was indicated here, on the occasion of the use, may mix independence or two kinds or more, and may be used.

[0077] When using such charge transportation material together, 20% or more of the content of a hydrazone compound expressed with the hydrazone compound and general formula (2) which are expressed with the general formula in [all] charge transportation material (1) is desirable at a weight ratio, and is desirable. [especially 50% or more of]

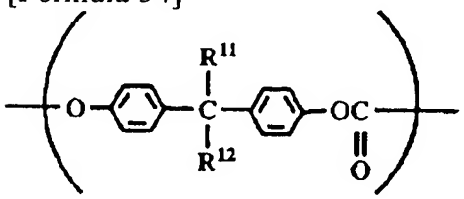
[0078] As a sensitizer used for the aforementioned photosensitive layer if needed, each can use a well-known thing.

[0079] As a sensitizer, a chloranil, a tetracyanoethylene, a Methyl Violet, Rhodamine B, cyanine dye, a merocyanine color, a pyrylium color, a thia pyrylium color, etc. are mentioned, for example.

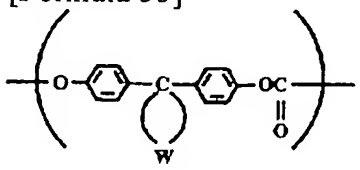
[0080] Moreover, in order to raise shelf life, endurance, and an environmental-proof dependency, degradation inhibitors, such as an antioxidant, an ultraviolet ray absorbent, and a light stabilizer, can also be made to contain in a photosensitive layer in the photo conductor for electrophotography of this invention if needed. As these matter, a phenolic compound, a hydroquinone compound, an amine compound, etc. can be mentioned, for example.

[0081] Although various things are mentioned as a binder resin which dissolves the charge transportation material of this invention, it is desirable to use the high molecular compound in which film formation of electric insulation is hydrophobic and possible. As such a macromolecule polymer, for

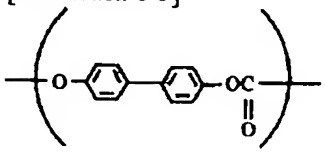
example Polycarbonate resin, Polyester resin, methacrylic resin, acrylic resin, a polyvinyl chloride resin, A polyvinylidene chloride resin, a polyarylate resin, polystyrene resin, A polyvinyl-acetate resin, polyvinyl butyral resin, a diallyl phthalate resin, A styrene-butadiene copolymer, a vinyl chloride-vinyl acetate-maleic-anhydride copolymer, Silicon resin, a silicon-alkyd resin, phenol resin, an epoxy resin, a styrene-alkyd resin, a Polly N-vinylcarbazole resin, a urea-resin, polysulfone resin, etc. are mentioned.
[0082] A polycarbonate and a polyarylate are desirable from forming the high photosensitive layer of endurance among these binding resins, and it is especially a general formula (3).
[0083]
[Formula 34]



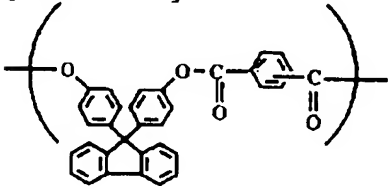
[0084] (The hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and R11 and R12 express a hydrogen atom, an alkyl group, or an aromatic machine in independent respectively.) Moreover, these bases may have a substituent. The polycarbonate, general formula (4) which have the repeat unit expressed
[0085]
[Formula 35]



[0086] (The hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and W expresses an atomic group required to form a ring and a heterocycle.) Moreover, these bases may have a substituent. The polycarbonate which has the repeat unit expressed, the repeat unit expressed with the above-mentioned general formula (3), and general formula (5)
[0087]
[Formula 36]



[0088] (-- the hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and these bases may have a substituent The copolymerization polycarbonate and general formula (6) which have the repeat unit expressed with)
[0089]
[Formula 37]

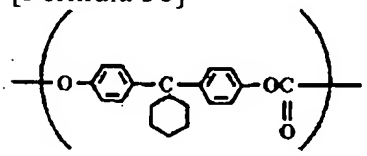


[0090] (-- the hydrogen atom in a formula and on a ring may be replaced by the halogen atom and the alkyl group, and these bases may have a substituent As a resin which dissolves the charge transportation

example.
[0101] The oxy-titanium phthalocyanine compound 20 section which shows the powder X diffraction spectrum by the CuK alpha rays which are the oxy-titanium phthalocyanine compounds obtained by the reaction of the <synthetic example 1> titanium tetrachloride and o-phthalonitrile, and were shown in drawing 6 , and the (R [2],R[3])-2 and 3-butanediol 4.4 section were made to react in the alpha-chloronaphthalene 240 section for 1.5 hours, ****(ing) at 195-205 degrees C.
[0102] After having carried out the ** exception after cooling reaction mixture to a room temperature, and washing a residue in order of benzene, a methanol, a dimethylformamide (it abbreviates to DMF hereafter.), and water, the phthalocyanine resultant was obtained by making it dry under reduced pressure.
[0103] This resultant showed the peak to m/Z=648 in the mass spectrum. The result which measured powder X diffraction SUOEKUTORU by the CuK alpha rays of this resultant was shown in drawing 7 . Furthermore, the result of the elemental analysis of this resultant was shown in Table 1.
[0104]
[Table 1]

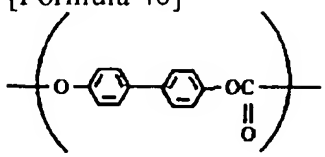
理論値	C66. 7	H3. 7	N17. 3
実測値	C66. 0	H3. 6	N17. 3

[0105] The phthalocyanine resultant 2 section and the butyral-resin ("id REKKU BH-3" by Sekisui Chemical Co., Ltd.) 2 section which were obtained in the example 1 of <example 1> composition were added to the mixed solvent which consists of the methylene-chloride 66 section and 1 and 1, and 2-trichloroethane 99 section, it distributed and mixed with the paint conditioner, and charge generating material-dispersion liquid was obtained.
[0106] Thus, the X diffraction spectrum of the thin film of 5 micrometers of thickness which performed the dip painting cloth and obtained the dispersion liquid of the obtained charge generating material to the the sheet metal was shown in drawing 8 .
[0107] Next, after applying so that a wire bar may be used and the thickness after dryness may change with 0.3 micrometers on the polyester film which deposited aluminum for the charge generating material-dispersion liquid which carried out in this way and was obtained, it was made to dry and the charge generating layer was formed.
[0108] The charge transportation material 8 section and the following structure expression (9) of instantiation compound No.183 which were described above on this charge generating layer
[0109]
[Formula 38]

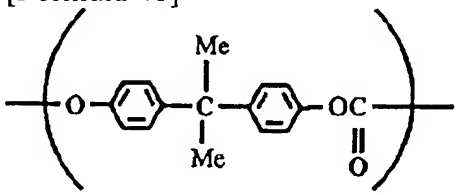


[0110] After applying the application liquid made to dissolve the polycarbonate ("you pyrone Z200" by Mitsubishi Gas Chemical Co., Inc.) 10 section which comes out and has the repeat unit expressed in the mixed solvent which consists of the methylene-chloride 54 section and the chlorobenzene 36 section so that the thickness after dryness may be set to 20 micrometers using a wire bar, it was made to dry and the charge transporting bed was formed, and the photo conductor for electrophotography which has the lamination shown in drawing 1 was obtained.
[0111] In the example 1 of the <synthetic example 2> composition, it replaced with (R [2],R[3])-2 and 3-butanediol, and the phthalocyanine resultant was obtained like the synthetic example 1 except

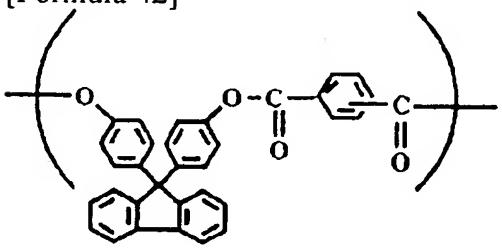
[0126] The repeat unit come out of and expressed, and a structure expression (11)
[0127]
[Formula 40]



[0128] The photo conductor for electrophotography was obtained like the example 1 except having used the 2 and 6-G t-butyl-p-cresol 1 section with the charge transportation material 8 section of instantiation compound No.183 which came out and described the repeat unit expressed above using the copolymerization polycarbonate which it has by the ratio of 86 to 14.
[0129] The charge transportation material 8 section, 2, and 6-G t-butyl-p-cresol 1 section and the structure expression (11) of instantiation compound No.183 which described the charge transporting bed above in the <example 7> example 1
[0130]
[Formula 41]



[0131] The photo conductor for electrophotography was obtained like the example 1 except having considered as the charge transporting bed which is dried and is obtained after applying the application liquid made to dissolve the polycarbonate ("panlight C1400" by Teijin Chemicals company) 10 section which comes out and has the repeat unit expressed in the mixed liquor which consists of the methylene-chloride 80 section and 1 and 1, and 2-trichloroethane 20 section so that the thickness after dryness may be set to 20 micrometers.
[0132] The charge transportation material 8 section, 2, and 6-G t-butyl-p-cresol 1 section and the structure expression (12) of instantiation compound No.183 which described the charge transporting bed above in the <example 8> example 1
[0133]
[Formula 42]



[0134] The photo conductor for electrophotography was obtained like the example 1 except having considered as the charge transporting bed which is dried and is obtained after applying the application liquid made to dissolve the polyarylate (product made from tradename "ISARYL25S" iso NOVA) 10 section which comes out and has the repeat unit expressed in the 1 and 4-dioxane 100 section so that the thickness after dryness may be set to 20 micrometers.
[0135] In the example 1 of the <synthetic example 5> composition, it replaced with the (R [2],R[3])-2 and 3-butanediol 4.4 section, and the phthalocyanine resultant was obtained like the synthetic example 1 except having used the (R [2],R[3])-2 and 3-butanediol 3.1 section.

[0136] this resultant -- a mass spectrum -- setting -- m/Z= -- the peak was shown in 576 and 648 The result which measured the powder X diffraction spectrum by the CuK alpha rays of this resultant was shown in drawing 15 .
[0137] In the <example 9> example 1, it replaced with the phthalocyanine resultant obtained in the synthetic example 1, and the photo conductor for electrophotography was produced like the example 1 except having used the phthalocyanine resultant obtained in the synthetic example 5.
[0138] Moreover, after carrying out a dip painting cloth so that the thickness after drying the dispersion liquid of the charge generating material used in the example 9 to a sheet metal may change with 5 micrometers, the X diffraction spectrum of the thin film which was made to dry and was obtained was shown in drawing 16 .
[0139] It replaces with the phthalocyanine resultant obtained in the synthetic example 1 in the <example 10> example 1. Use the phthalocyanine resultant 2 section obtained in the synthetic example 3, and it replaces with the polycarbonate which has the repeat unit expressed with the aforementioned structure expression (9). The polycarbonate (tradename by the Teijin Chemicals company "the panlight C1400") which has the repeat unit expressed with the aforementioned structure expression (10) is used. Replace with the mixed solvent which consists of a methylene chloride and a chlorobenzene, and the mixed solvent which consists of the methylene-chloride 40 section and 1 and 1, and 2-trichloroethane 10 section is used. Furthermore, the photo conductor for electrophotography was obtained like the example 1 except having used the 2 and 6-G t-butyl-p-cresol 1 section with the charge **** transportation material 8 section of said instantiation compound No.183.
[0140] In the example 1 of the <example 1 of comparison composition> composition, it replaced with (R [2],R[3])-2 and 3-butanediol, and the phthalocyanine resultant was obtained like the synthetic example 1 except having used meso -2 and 3-butanediol.
[0141] This resultant showed the peak to m/Z=648 in the mass spectrum. The result which measured the powder X diffraction spectrum by the CuK alpha rays of this resultant was shown in drawing 17 .
[0142] In the <example 1 of comparison> example 1, it replaced with the phthalocyanine resultant obtained in the synthetic example 1, and the photo conductor for electrophotography was obtained like the example 1 except having used the phthalocyanine resultant obtained in the example 1 of comparison composition.
[0143] Moreover, after carrying out a dip painting cloth so that the thickness after drying the dispersion liquid of the charge generating material used in the example 1 of comparison to a sheet metal may change with 5 micrometers, the X diffraction spectrum of the thin film which was made to dry and was obtained was shown in drawing 18 .
[0144] In the example 1 of the <example 2 of comparison composition> composition, it replaced with (R [2],R[3])-2 and 3-butanediol, and the phthalocyanine resultant was obtained like the synthetic example 1 except having used ethylene glycol.
[0145] This resultant showed the peak to m/Z=620 in the mass spectrum. The result which measured the powder X diffraction spectrum by the CuK alpha rays of this resultant was shown in drawing 19 .
[0146] In the <example 2 of comparison> example 1, it replaced with the phthalocyanine resultant obtained in the synthetic example 1, and the photo conductor for electrophotography was obtained like the example 1 except having used the phthalocyanine resultant obtained in the example 2 of comparison composition.
[0147] Moreover, after carrying out a dip painting cloth so that the thickness after drying the dispersion liquid of the charge generating material used in the example 2 of comparison to a sheet metal may change with 5 micrometers, the X diffraction spectrum of the thin film which was made to dry and was obtained was shown in drawing 20 .
[0148] It replaces with said charge transportation material of instantiation compound No.183 in the <example 3 of comparison> example 1, and is a structure expression (13).
[0149]
[Formula 43]

		V_0 (V)	電位保持率 (%)	V_1 (V)	$E_{1/2}$ ($\mu J/cm^2$)
実施例1	初　期	−954	85	0	0.37
	500回後	−922	75	0	0.36
実施例2	初　期	−930	85	0	0.38
	500回後	−906	77	0	0.35
実施例3	初　期	−940	86	0	0.38
	500回後	−924	76	0	0.37
実施例4	初　期	−948	85	0	0.38
	500回後	−925	78	0	0.36
実施例5	初　期	−935	83	0	0.38
	500回後	−906	76	0	0.36
実施例6	初　期	−947	84	−1	0.37
	500回後	−928	78	0	0.36
実施例7	初　期	−899	85	0	0.37
	500回後	−878	78	0	0.37

[0154]
[Table 3]

		V_0 (V)	電位保持率 (%)	V_1 (V)	$E_{1/2}$ ($\mu J/cm^2$)
実施例８	初　期	−９３７	８９	０	０．３８
	500回後	−９１８	８５	０	０．３７
実施例９	初　期	−９２５	８５	−１	０．３７
	500回後	−９０８	７５	０	０．３５
実施例１０	初　期	−９２９	８６	０	０．３５
	500回後	−９００	７９	−２	０．３５
比較例１	初　期	−９１０	８０	−１３	２．５３
	500回後	−８７０	７３	−１７	２．４７
比較例２	初　期	−９３５	８５	−２０	２．８０
	500回後	−８８９	７３	−２６	３．０１
比較例３	初　期	−９２４	８６	−２１	０．３９
	500回後	−８９１	７０	−３７	０．３９

[0155] In the <examples 11-20> example 10, it replaced with the charge **** transportation material 8 section of instantiation compound No.183, and the photo conductor for electrophotography was obtained like the example 10 except having used the charge transportation material 10 section shown in Table 4 and 5.

[0156] Moreover, the electrophotography property by the method evaluated by examples 1-10 and the same method was also shown in Table 4 and 5 about these photo conductors for electrophotography.

[0157]

[Table 4]

thickness of 1mm with 1 micrometer.
[0160] Next, the phthalocyanine resultant 2 section and the butyral-resin (Sekisui Chemical "S REKKU BH-3") 2 section which were obtained in the synthetic example 3 were added to the mixed solvent of the methylene-chloride 66 section and 1 and 1, and 2-trichloroethane 99 section, it distributed and mixed with the paint conditioner, and charge generating material-dispersion liquid was obtained. Thus, after applying the obtained charge generating material-dispersion liquid so that the thickness after dryness may change with 0.4 micrometers on the above-mentioned barrier layer by the dip painting method of construction, it was made to dry and the charge generating layer was prepared.
[0161] Next, the polycarbonate (tradename "you pyrone Z200" Mitsubishi Gas Chemical Co., Inc. make) 10 section which has the repeat unit expressed with the charge **** transportation material 8 section, 2, and 6-G t-butyl-p-cresol 1 section and the aforementioned structure expression (9) of said instantiation compound No.183 was dissolved in the mixed solvent which consists of the methylene-chloride 54 section and the chlorobenzene 36 section, and the paint for charge transporting-bed formation was obtained. Thus, the photo conductor for drum-like electrophotography was obtained by drying the obtained paint for charge transporting-bed formation, after [when the thickness after dryness changes with 20 micrometers on the above-mentioned charge generating layer by immersing coating] applying, and preparing a charge transporting bed.
[0162] In the <examples 22-24> example 21, it replaced with the charge **** transportation material 8 section of instantiation compound No.183, and the photo conductor for electrophotography was obtained like the example 21 except having used the charge transportation material 10 section shown in the following table 6.
[0163] In the <example 4 of comparison> example 21, it replaced with the charge **** transportation material 8 section of instantiation compound No.183, and the photo conductor for electrophotography was obtained like the example 21 except having used the charge transportation material 10 section expressed with the aforementioned structure expression (13).
[0164] The commercial LASER beam printer (product made from tradename "LaserJet 4" Hewlett Packard) was equipped with the photo conductor for drum-like electrophotography obtained in the <picture property> examples 21-24 and the example 4 of comparison, continuation printing was performed, supplying a toner, and the picture state was evaluated.
[0165] The evaluation result after the first stage and printing examination of 10,000 sheets was used as the chart, and was shown in Table 6.
[0166]
[Table 6]

感光体	電荷輸送材料	初期画像	1万枚印刷後の画像
実施例21	No. 183	高品質 (○)	初期画像から殆ど変化なし
実施例22	No. 18	高品質 (○)	初期画像から殆ど変化なし
実施例23	No. 41	高品質 (○)	初期画像から殆ど変化なし
実施例24	No. 221	高品質 (◎)	初期画像から殆ど変化なし
比較例4	(13)	濃度不足 (△)	濃度低下、ゴースト出現

[0167]
[Effect of the Invention] The photo conductor for electrophotography of this invention has high

sensitivity in the long wavelength light source near 700nm, is maintaining high stability at it at the time of repeat use, and is very effective practically.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the type section view showing an example of the lamination which the photo conductor for electrophotography of this invention can take.
[Drawing 2] It is the type section view showing an example of the lamination which the photo conductor for electrophotography of this invention can take.
[Drawing 3] It is the type section view showing an example of the lamination which the photo conductor for electrophotography of this invention can take.
[Drawing 4] It is the type section view showing an example of the lamination which the photo conductor for electrophotography of this invention can take.
[Drawing 5] It is the type section view showing an example of the lamination which the photo conductor for electrophotography of this invention can take.
[Drawing 6] It is a powder X diffraction spectrum view by the CuK alpha rays of the oxy-titanium phthalocyanine compound used as a manufacture raw material in the synthetic example 1.
[Drawing 7] It is a powder X diffraction spectrum view by the CuK alpha rays of the phthalocyanine resultant obtained in the synthetic example 1.
[Drawing 8] It is the X diffraction spectrum view of the thin film obtained by carrying out the dip painting cloth of the resin dispersant of the phthalocyanine resultant produced in the example 1 to a sheet metal.
[Drawing 9] It is a powder X diffraction spectrum view by the CuK alpha rays of the phthalocyanine resultant obtained in the synthetic example 2.
[Drawing 10] It is a powder X diffraction spectrum view by the CuK alpha rays of the phthalocyanine resultant obtained in the synthetic example 3.
[Drawing 11] It is the X diffraction spectrum view of the thin film obtained by carrying out the dip painting cloth of the resin dispersant of the phthalocyanine resultant produced in the example 4 to a sheet metal.
[Drawing 12] It is a powder X diffraction spectrum view by the CuK alpha rays of the oxy-titanium phthalocyanine compound used as a manufacture raw material in the synthetic example 4.
[Drawing 13] It is a powder X diffraction spectrum view by the CuK alpha rays of the phthalocyanine resultant obtained in the synthetic example 4.
[Drawing 14] It is the X diffraction spectrum view of the thin film obtained by carrying out the dip painting cloth of the resin dispersant of the phthalocyanine resultant produced in the example 5 to a sheet metal.
[Drawing 15] It is a powder X diffraction spectrum view by the CuK alpha rays of the phthalocyanine resultant obtained in the synthetic example 5.
[Drawing 16] It is the X diffraction spectrum view of the thin film obtained by carrying out the dip painting cloth of the resin dispersant of the phthalocyanine resultant produced in the example 9 to a sheet metal.
[Drawing 17] It is a powder X diffraction spectrum view by the CuK alpha rays of the phthalocyanine

resultant obtained in the example 1 of comparison composition.
[Drawing 18] It is the X diffraction spectrum view of the thin film obtained by carrying out the dip painting cloth of the resin dispersant of the phthalocyanine resultant produced in the example 1 of comparison to a sheet metal.
[Drawing 19] It is a powder X diffraction spectrum view by the CuK alpha rays of the phthalocyanine resultant obtained in the example 2 of comparison composition.
[Drawing 20] It is immersed to a sheet metal about the resin dispersant of the phthalocyanine resultant produced in the example 2 of comparison.
[Description of Notations]
1 Conductive Base
2 Charge Generating Layer
3 Charge Transporting Bed
4 Charge Generating and Transporting Bed
5 Interlayer
6 Surface-Protection Layer
7 Charge Generating Material
8 Charge Transportation Material

[Translation done.]